

WHAT IS CLAIMED IS:

1. A repair sleeve for a nuclear fuel assembly comprising:

a shaft with a first end, a second end and a diameter, the diameter configured to fit into a guide thimble opening of a top nozzle of the nuclear fuel assembly, wherein the diameter of the shaft is dimensioned such that an exterior of the shaft snugly fits into the guide thimble opening, wherein the shaft has at least two openings; and

at least two tendons extending through the openings, wherein the tendons are configured to deflect in an instance of a horizontal load on the tendon, the tendons having a dimple configured to be inserted into a dimple area of a guide thimble sleeve, wherein the shaft is configured to internally accept a thimble insert assembly of the fuel assembly and wherein the at least two tendons do not deflect under a load when the control component is installed.

2. The repair sleeve according to claim 1, wherein the shaft is configured with at least 4 openings.

3. The repair sleeve according to claim 1, wherein the sleeve is configured of stainless steel.

4. The repair sleeve according to claim 1, wherein the dimple has a first sloped contact face for contact to a guide thimble sleeve.

5. The repair sleeve according to claim 1, wherein the diameter of the sleeve in areas other than the dimple is a constant dimension.

6. The repair sleeve according to claim 1, further comprising:

a laped edge connected to the shaft, the laped edge located at the first end.

7. The repair sleeve according to claim 6, wherein the laped edge is configured with a diameter larger than a diameter of the opening of the top guide thimble.

8. The repair sleeve according to claim 6, wherein the laped edge is configured to

contact a top surface of the top nozzle.

9. A method to repair a fuel assembly, comprising:

providing a repair sleeve, the repair sleeve having a shaft with a first end, a second end and a diameter, the diameter configured to fit into a guide thimble opening of a top nozzle of the fuel assembly, wherein the diameter of the shaft is dimensioned such that an exterior of the shaft snugly fits into the guide thimble opening, wherein the shaft has at least two openings, and at least two tendons extending through the openings, the tendons configured to deflect in an instance of a horizontal load on the tendon, the tendons having a dimple configured to be inserted into a dimple of a guide thimble sleeve; and

inserting the repair sleeve in the guide thimble opening in the top nozzle of the nuclear fuel assembly such that the dimples of the tendons project into the dimples of the guide thimble sleeve; and

inserting a thimble insert assembly into an interior of the repair sleeve.

10. The method according to claim 9, wherein the step of inserting the thimble insert assembly into the interior of the repair sleeve prevents further deflection of the repair sleeve in a horizontal direction.